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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/993,531	11/06/2001	Kevin B. Todd	DKT00151	9261

7590 08/11/2004  
BORGWARNER INC.  
POWERTRAIN TECHNICAL CENTER  
3800 AUTOMATION AVENUE  
SUITE 100  
AUBURN HILLS, MI 48326

EXAMINER
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MCANULTY, TIMOTHY P

ART UNIT	PAPER NUMBER
3682	

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary****Application No.**

09/993,531

**Applicant(s)**

TODD, KEVIN B.

**Examiner**

Timothy P McNulty

**Art Unit**

3682



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) 32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/19/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-8,10-18, and 20-28 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 4,526,558 to Durham (Durham '558).

Durham '558 discloses in the figure a chain and sprocket drive system comprising a chain and a generally circular sprocket 1 having a plurality of teeth on a periphery thereof and having roots located between adjacent teeth wherein the roots of said sprocket include at least three different root radii as measured from the rotational center of the sprocket.

Regarding claims 2,4-7,12- 15,21-28 there is reason to believe, based on the similarity of material and structure, that the functional limitations of tensions imparted to the chain by the sprocket may be an inherent characteristic of the reference set forth above. [W]here the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied upon. *In re Best*, 562 F.2d 1252, 195 USPQ 430, 433 (CCPA 1977). Accordingly, the burden is placed upon the applicant to prove that those limitations are not an inherent characteristic of the reference.

3. Claims 1-8,10-18,20-29, and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Ledvina et al.

Ledvina et al. discloses in figure 3, a chain and sprocket drive system comprising a chain and a generally circular sprocket having a plurality of teeth on a periphery thereof and having roots located between adjacent teeth wherein the roots of said sprocket include at least three different root radii as measured from the rotational center of the sprocket.

Regarding claims 29 and 31, Ledvina et al. further discloses in lines 64-66 of column 4, said chain and sprocket drive system used as a commercial engine timing drive.

Regarding claims 2,4-7,12-15,21-28, and 31 there is reason to believe, based on the similarity of material and structure, that the functional limitations of tensions imparted to the chain by the sprocket may be an inherent characteristic of the reference set forth above. [W]here the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied upon. *In re Best*, 562 F.2d 1252, 195 USPQ 430, 433 (CCPA 1977). Accordingly, the burden is placed upon the applicant to prove that those limitations are not an inherent characteristic of the reference.

***Claim Rejections - 35 USC § 103***

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Durham '558.

Durham '558 discloses the basic apparatus as previously cited but does not specifically disclose said at least three root radii are arranged in a pattern which repeats four times around said periphery. However, the pattern is merely a matter of engineering design choice and the

level of skill of one of ordinary skill in the art would produce a similar optimization, especially absent any evidence to the contrary, i.e. unexpected results. Providing at least three root radii in a pattern around a sprocket is old and well known in the art and one of ordinary skill in the art would arrange the three root radii to be in any pattern to meet specific needs of an application.

6. Claims 9, 19, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ledvina et al.

Ledvina et al. discloses the basic apparatus as previously cited but does not specifically disclose said at least three root radii are arranged in a pattern which repeats four times around said periphery. However, the pattern is merely a matter of engineering design choice and the level of skill of one of ordinary skill in the art would produce a similar optimization, especially absent any evidence to the contrary, i.e. unexpected results. Providing at least three root radii in a pattern around a sprocket is old and well known in the art and one of ordinary skill in the art would arrange the three root radii to be in any pattern to meet specific needs of an application.

#### ***Response to Arguments***

7. Applicant's arguments filed 19 July 2004 have been fully considered but they are not persuasive.

Only claims 1-9, 20-26, and 29-31 include the limitation that the pattern of root radii *reduce* the overall tension exerted on the chain. Claims 10-19, 27, and 28 only require that the pattern of root radii *distribute* tensions imparted to the chain. Regarding claims 1-9, 20-26, and 29-31, applicant has not fully established how the sprockets disclosed by Durham '558 and Ledvina et al. do not "reduce overall tension" exerted on the chain. Regarding claims 10-19, 27, and 28, the term

distribute merely requires that the tension imparted to the chain be divided or separated which the different root radii, by providing different respective tensions to the chain, inherently do.

Additionally, any sprocket having different root radii will inherently reduce the tension exerted on the chain. A sprocket having different root radii inherently establishes at least one of the root radii being smaller than another one of the root radii. A sprocket not having different root radii (having all root radii the same) exerts a certain tension on a chain engaged with such a sprocket. Changing even one root radius on the sprocket to be less than the other root radii will cause the chain, when engaged with the sprocket at the one different root radius, to experience a lower tension than the chain experiences when engaged with the other root radii. That is, since the one root radius is smaller than the other root radii, the chain spans a distance shorter when engaged with the smaller root radius than the chain spans when engaged with the other root radii. This concept compounds when more than one of the root radii is made to be smaller; with more than one root radii made smaller, the chain will span a shorter distance several times as the sprocket rotates. Thus a sprocket having first root radii and second root radii smaller than said first root radii, wherein the sprocket has several second root radii and the remainder first root radii will inherently exert a lower tension on the chain than a sprocket having all first radii. Thus any sprocket having varying radii will inherently exert a lower tension on the chain than would a sprocket having all radii being the same as the largest of said varying radii. Accordingly, the sprockets disclosed in Durham '558 and Ledvina et al. meet the claim limitations.

Regarding the method claims 20-26, the method steps therein are inherent to the claimed apparatus of claims 1-19 and 26-31. As such, the limitations of claims 20-26 are disclosed and met by the sprockets of Durham '558 and Ledvina et al. The fact that Durham '558 and Ledvina

et al. do not specifically state "a method of distributing tensions" does not negate the fact that the structure disclosed therein meets the various method steps, i.e., the claimed method steps of distributing tensions are inherent to the structure disclosed in Durham '558 and Ledvina et al.

***Conclusion***

8. This is a request for continued examination of applicant's earlier Application No. 09/993531. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy P McAnulty whose telephone number is 703.308.8684. The examiner can normally be reached on Monday-Friday (7:30-5:00).

Art Unit: 3682

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bucci can be reached on 703.308.3668. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

tpm

  
8/6/04  
-DAVID A. BUCCI  
SUPERVISORY PATENT EXAMINER  
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